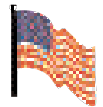


# AC Outlet Analyzer and Wrist Strap Tester - Operation and Maintenance



Made in America



Figure 1. SPI 94380 AC Outlet Analyzer and Wrist Strap Tester

## Description

SPI's AC Outlet Analyzer and Wrist Strap Tester is an easy-to-use, low cost, plug-in tester. It is designed to confirm the integrity of the resistance path from field service personnel to ground. This is possible through wrist strap grounding systems and the equipment grounding conductor.

When the AC Outlet Analyzer and Wrist Strap Tester is plugged into an AC outlet, the green LED lights if the outlet's wiring is correct and the path to earth ground via the equipment grounding conductor (the green wire) is intact. The red LED lights if either condition is not met.

## Instructions

By touching the Test Button on the tester, a person can quickly and easily ensure that their wrist strap grounding system contains adequate current limiting resistance and that there is continuity from one's skin to ground. The tester detects poorly fitting, worn out, corroded or dirty wrist straps. It can also be used to check the integrity of the conductive path from sleeve-to-sleeve of ESD protective garments.

## Resistance Limits

Use the AC Outlet Analyzer and Wrist Strap Tester to fulfill the S6.1 Section 6.3.1 requirement. "The hot, neutral, and equipment grounding conductor shall be verified to be in the proper wiring orientation in accordance with the National Electric Code (ANSI/NFPA-70)." (Grounding ANSI ESD S6.1 section 6.3.1 Equipment Grounding Conductor)

The AC Outlet Analyzer and Wrist Strap Tester meets ANSI/ESD S20.20-2007 Wrist Strap System Compliance Verification test method per ESD TR53 in accordance with S20.20 Table 2 lower limit 800 kilohms and upper limit of <math><3.5 \times 10^7</math> ohms.

"Typical test programs recommend that wrist straps that are used daily should be tested daily." (Handbook ESD TR 20.20 paragraph 5.3.2.4.4)

## Calibration

The AC Outlet Analyzer and Wrist Strap Tester is calibrated to NIST traceable standards. Calibration may be performed to insure that the tester is operating within limits. We recommend annual calibration of our testers.

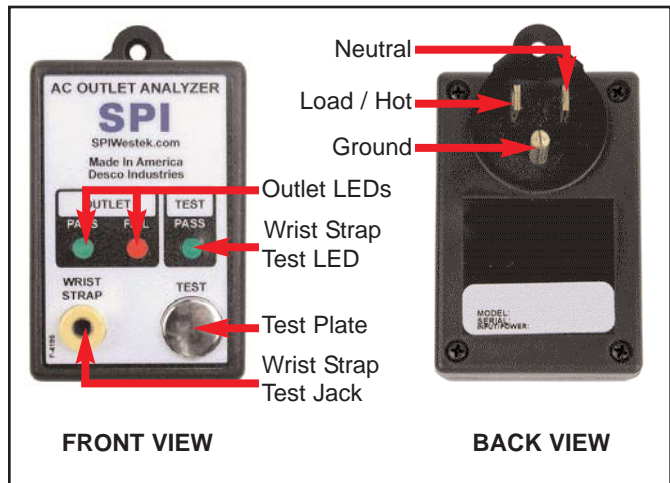


Figure 2. AC Outlet Analyzer and Wrist Strap Tester features and components

## TESTING THE WRIST STRAP TESTER

- A. LOW FAIL** - Connect a 450 kilohm resistor @ 5% tolerance between the Wrist Strap Test Jack and the Test Plate. The Wrist Strap Test LED will momentarily illuminate then turn off. This test confirms the **LOW FAIL** point.
- B. LOW PASS** - Connect a 550 kilohm resistor @ 5% tolerance between the Wrist Strap Test Jack and the Test Plate. The Wrist Strap Test LED will remain illuminated until the resistor is removed from the Test Plate. This test confirms the **LOW PASS** point.

**C. HIGH PASS** - Connect a 45 megohm resistor @ 5% tolerance between the Wrist Strap Test Jack and the Test Plate. The Wrist Strap Test LED will remain illuminated until the resistor is removed from the Test Plate. This test confirms the **HIGH PASS** point.

**D. HIGH FAIL** - Connect a 55 megohm resistor @ 5% tolerance between the Wrist Strap Test Jack and the Test Plate. The Wrist Strap Test LED should not illuminate. This test confirms the **HIGH FAIL** point.

### TESTING THE AC OUTLET ANALYZER

Isolate the ground plug from the AC Outlet Analyzer and Wrist Strap Tester by inserting the tester into a "3 to 2" plug adapter.

**A. PASS OUTLET** - Connect a 5 kilohm resistor @ 5% tolerance across the Neutral Plug and Ground Plug. The Outlet PASS LED should remain illuminated until the resistor is removed. This test confirms the **PASS** point for the neutral-to-ground resistance.

**B. FAIL OUTLET** - Connect a 12.5 kilohm resistor @ 5% tolerance across the Neutral Plug and Ground Plug. The Outlet FAIL LED should remain illuminated until the resistor is removed. This test confirms the **FAIL** point for the neutral-to-ground resistance.

### Specifications

Input Voltage:  
120 VAC ±15%

Current Drain:  
< 10mA

Operator Resistance Limits (nominal):  
500 kilohms - 50 megohms

Test Voltage, Open Circuit:  
27 VDC (nominal)

Equipment Ground Conductor Resistance Limits:  
10 kilohms (nominal)

Long Term Drift:  
< . 1% / decade

Size:  
2" x 3" x 1.3" (5.1 cm x 7.6 cm x 3.2 cm)

Operating Temperature:  
0° - 40° Celsius

Long Term Drift:  
< . 1% / decade

Size:  
2" x 3" x 1.25" (5.1 cm x 7.6 cm x 3.2 cm)

Operating Temperature:  
0 degrees - 40 degrees Celsius

#### Limited Warranty

SPI expressly warrants that for a period of one (1) year from the date of purchase, SPI AC Outlet Analyzer and Wrist Strap Testers will be free of defects in material (parts) and workmanship (labor). Within the warranty period, the product will be tested, repaired, or replaced at our option, free of charge. Call our Customer Service Department at 909-664-9986 for a Return Material Authorization (RMA) and proper shipping instructions and address. Include a copy of your original packing slip, invoice, or other proof of purchase date. Any unit under warranty should be shipped prepaid to the SPI factory. Warranty repairs will take approximately two weeks.

If your unit is out of warranty, call Customer Service at 909-664-9986 for a Return Material Authorization (RMA) and proper shipping instructions and address. SPI Westek will quote repair charges necessary to bring your unit up to factory standards.

#### Warranty Exclusions

THE FOREGOING EXPRESS WARRANTY IS MADE IN LIEU OF ALL OTHER PRODUCT WARRANTIES, EXPRESSED AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH ARE SPECIFICALLY DISCLAIMED. The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean or repair products.

#### Limit of Liability

In no event will SPI or any seller be responsible or liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, users shall determine the suitability of the product for their intended use, and users assume all risk and liability whatsoever in connection therewith.